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M E M O R A N D U M

DATE: May 21, 2004

TO: Mr. Jim Juricic, Manager
Environmental Assessment Section
Indiana Department of Transportation
848 Government Center North
100 North Senate Avenue
Indianapolis, Indiana 46204

FROM: Bob Hittle, Environmental Project Manager

RE: I-465 Indianapolis Northwest Fast Track
West 71st Street & West 86th Street
Interchange Improvements and Added Travel Lanes
Indianapolis, Marion County, Indiana
ACE Job No. IN20020736

CC: Ron Heustis, INDOT
Bob Buskirk, INDOT
Phil Kuntz, JSE
Mark Zwoyer, RWA
Jim Kovacs, ACE

This memo provides additional information relative to noise impacts associated with the above referenced project. Two issues have arisen subsequent to the public information meeting conducted on April 14, 2004. Those issues are:

- The potential to provide barriers to protect the Gordon Acres Subdivision located west I-465 north of 79th Street
- The potential to provide barriers to protect the Hampton Inn and the Courtyard Marriott Inn located adjacent to the existing eastern I-465 right-of-way in the 7200 block of Woodland Drive in Park 100

Several very relevant facts exist regarding the noise levels and the potential effectiveness of barriers at each location. At this time, no specific modeling has been developed to evaluate the feasibility and reasonableness of barriers at either location. However, we believe it is important for INDOT to be aware of the conditions which potentially affect barriers at either location.

Specifically, with respect to the potential for barriers to protect the Gordon Acres Subdivision, the following information should be considered:

- The subdivision is approximately 1,200 feet west of the INDOT right-of-way, separated from the highway by two tree lines and open fields.
- Measured ambient noise levels (~4:30 p.m.) at a distance of 450 feet from a segment of the highway on which the traffic volumes were equal those which impact the subdivision were approximately 65 dBA (L_{eq}).
- Extrapolating from that measured noise level, the potential observed noise level at the closest point in the subdivision would be 3-4 dBA lower based solely on reduction due to distance.
- Modeled increases in noise levels comparing 2006 Existing to 2026 Build conditions show typical increases over that time frame of less than 2dBA.
- Doing the simple math gives an approximate 2026 Build noise level of 64 dBA, below the Noise Abatement Criteria B of 67 dBA.
- The apparent anticipated noise level does not approach or exceed the Noise Abatement Criteria under INDOT's policy.
- Because the subdivision is so far from the highway, and because the rule of thumb indicates that a barrier should be approximately five times as long as the distance from the source to the receiver, a barrier length of up to 6,000 feet could be required. At an estimated cost per linear foot of \$280 for a barrier 14 feet high (as modeled for the West 86th Street Neighborhood), the estimated total cost for a barrier would be \$1,680,000. There are five residences which are in closest proximity to the highway. The approximate cost per receiver protected is \$336,000.
- The subdivision has a total of approximately 27 residences. If a barrier effectively protected every residence in the subdivision, the cost per receiver protected would be approximately \$62,225.
- If it is assumed that the same barrier would effectively protect every receiver within approximately 2,500 feet from the highway (the distance to Conarroe Road), a total of approximately 38 receivers would be benefited. The cost per receiver protected would be \$44,210.
- Under INDOT's policy, it does not appear that a barrier meets either the feasible or reasonable criteria.

With specific regard to the potential for barriers to protect the two hotels, the following information should be considered:

- The Hampton Inn is approximately 460 feet from the I-465 centerline, while the Courtyard Inn is approximately 260 feet from the centerline. The modeled noise level at those locations is approximately 72 dBA.
- Modeled noise levels for the remainder of the project have shown only a 1-2 dBA increase between 2006 Existing and 2026 Build values. Therefore, although the modeled noise level in the vicinity of the hotels is above Noise Abatement Criteria B, the increase does not fall within the range considered to substantially exceed the criteria.
- The Hampton Inn is a 4-story structure and the Courtyard Inn is a 3-story structure. Both hotels have their narrow dimension (~55 feet and ~65 feet) immediately adjacent to the right-of-way.
- Noise levels (2026 Build) experienced at those locations will be generated from three sources – the mainline traffic, the traffic on the northbound on-ramp from 71st Street to I-465, and the northbound off-ramp from I-465 to the new 73rd Street entrance into Park 100.
- The interchange geometrics are very complex in the northeast quadrant of the 71st/73rd Street interchange. The mainline profile will remain at approximately the existing elevation. The profile for the reconstructed northbound on-ramp, carrying all northbound traffic entering I-465 at this location, will be at approximately the existing elevation. The profile for the new 73rd Street off-ramp will be elevated over both 71st Street and the reconstructed northbound on-ramp.
- The projected 2026 traffic volumes on the I-465 mainline north of 71st Street are approximately 155,665 vehicles per day. The projected traffic volumes on the northbound on-ramp are approximately 20,950 vehicles per day. The projected traffic volumes on the new 73rd Street off-ramp are approximately 4,680 vehicles per day.
- The combined ramp volumes in the vicinity of the hotels are 25,630 vehicles per day – approximately 16% of the mainline volume and approximately 14% of the total daily traffic past that location. The ramp volumes are not anticipated to contribute significantly to the noise levels produced by the mainline traffic volumes.
- With particular consideration of the new 73rd Street off-ramp, it is significant to note that the ramp serves an industrial/commercial park and the traffic volumes are substantially limited to daylight hours when the businesses are in operation, likely minimizing conflicts with guests at the hotels.
- To provide the broadest level of noise protection possible, it would likely be necessary to construct barriers along both the reconstructed northbound on-ramp and the new 73rd Street off-ramp.

- A barrier constructed along the reconstructed northbound on-ramp would potentially be approximately 1,200 feet long and constructed at-grade. A barrier constructed along the new 73rd Street off-ramp would potentially be approximately the same length, but it would be constructed on the elevated ramp structure.
- It is significant to note that a barrier constructed along the new 73rd Street off-ramp would be on the inside of a relatively short-radius curve as the ramp connects to the intersection of Woodland Drive with 73rd Street with a stop condition at the bottom of the ramp. The design of that ramp presented a significant problem to the designers as they evaluated design speed, operating speed, superelevation, sight distance, and stopping distance, all in compliance with INDOT standards. Constructing a barrier on the inside of the curve would likely have an adverse impact on sight distance.
- Because the height of the hotels exceeds the normal height of receivers modeled for barrier analysis, some determination must be made by INDOT relative to the receiver height prior to any potential modeling effort. This decision is compounded by the elevations of the various ramp and mainline pavements.
- The estimated cost of the two barriers is approximately \$576,000 (2,400 linear feet x \$240/lft for a 12' barrier height). INDOT must provide guidance relative to determining the number of receivers protected to enable us to determine the cost per receiver protected and therefore the reasonableness of any barrier proposed.
- A very significant issue which must be addressed relates to the expressed desire of other receivers in the industrial/commercial park to maintain their visibility from I-465. Many potential receivers have paid a premium to have locations with high visibility. Although the barriers which would protect the hotels would be largely isolated from the remainder of the park area, visibility for the hotels remains an issue which should be thoroughly evaluated by the management firm.

Please review the above discussion and provide any comments or questions you may have. We are particularly interested in your direction relative to the need to perform additional modeling in view of these facts. Thank you for your consideration and guidance in this matter.